"Market" DCF Analysis

Q. Please describe the errors in Mr. Mulle's "market" DCF analysis.

A. The "market" DCF analysis performed by Mr. Mulle is full of errors. I will address only three of the most substantial errors in the analysis. First, Mr. Mulle's growth rate estimation procedure is invalid and leads to nonsensical results. Second, Mr. Mulle incorrectly double-counted growth from the issuance of new shares in his estimate of the dividend growth rate parameter. Third, a measure of stock price appreciation was incorrectly included as one of Mr. Mulle's elements of dividend growth.

Q. Please explain why Mr. Mulle's growth rate estimation procedure is invalid.

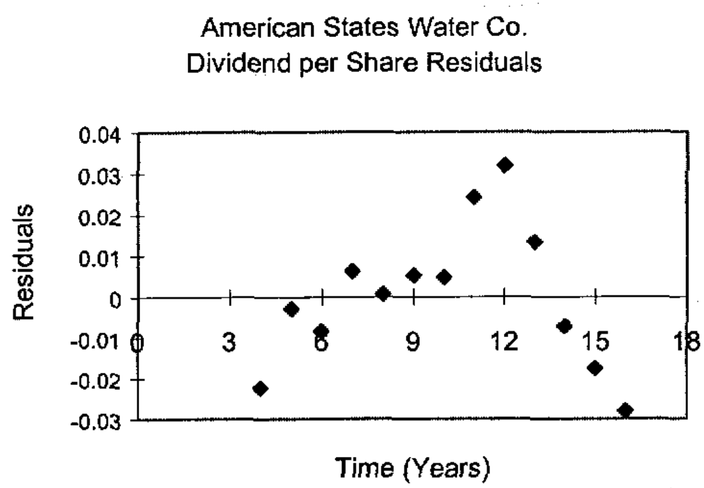
A. Apparently, Mr. Mulle used a multi-step procedure for estimating growth rates. First, for each water utility in his sample, Mr. Mulle regressed each of his growth rate parameters [i.e., stock price, earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS)] against time using data from periods ranging from the last five to the last sixteen years. Next, from the model developed from the time period that had the highest coefficient of determination (R^2),[50] Mr. Mulle computed the values of the growth rate parameter that the model predicts, not only for the period that model covers, but for the forecasted period 1998-2002. Then, Mr. Mulle calculated the three-year average for each parameter for both the 1995-1997 period and the 2000-2002 period. Finally, for each

[50] The coefficient of variation measures the amount of variation in the dependent variable (e.g., earnings per share) that the model explains.

parameter, Mr. Mulle calculated the growth rate that the 2000-2002 forecasted average implies in relation to the 1995-1997 average period.

That procedure is improper for several reasons. First and foremost, Mr. Mulle applied an arithmetic model (i.e., one that assumes that the series changes in equal amounts) to a geometric series (i.e., one that changes in progressively greater or smaller amounts). In other words, Mr. Mulle has tried to fit a straight line to a curve. Mr. Mulle's misspecified model results in autocorrelation, which "may be defined as correlation between observations ordered in time or space."[51] An example of autocorrelation is illustrated in the graph below, which shows the residuals (i.e., the difference between actual and predicted values) that result from Mr. Mulle's regression model that predicts the dividends per share of American States Water Co. plotted against time. That graph shows a systematic relationship between those residuals and Mr. Mulle's independent variable, time. That is, the residuals are "ordered in time." The presence of autocorrelation in a linear regression model creates three difficulties: 1) it likely leads to an underestimation of the true standard errors of the intercept and coefficients;[52] that is, the estimators are not as reliable as they might appear; 2) it renders *t* and *F* tests of significance invalid;[53] and 3) it likely produces a distorted picture of the estimators;[54] that is, Mr. Mulle's estimates of the intercept term and the slope and the forecasts of stock price, earnings, dividends and book value per share that he derives therefrom are questionable at best.[55]

[51] Kendall and Buckland, *A Dictionary of Statistical Terms*, Hafner Publishing Company, 1971, p.8 as quoted in Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 219.
[52] Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 226.
[53] Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 226.
[54] Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 226.
[55] Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 226.



Q. Can you provide an example of the problem created when a linear model is fitted to nonlinear data?

A. Yes. As previously revealed, Mr. Mulle used the estimates of the annual change in each parameter (i.e., stock price, EPS, DPS, and BVPS) to forecast values for the period 1998-2002. Although five years is a common length for long-term forecasts, that period is arbitrary and could be longer or shorter with equal validity. For Aquarion, I extended Mr. Mulle's "trend" in earnings per share to 2007 and calculated the implied growth rate for the resulting ten year period which equals 3.7%. In comparison, Mr. Mulle's five-year earnings growth rate for Aquarion equals 4.3%. Since Mr. Mulle's model assumes that earnings per share will change by the same amount every year, the annual percentage increase in earnings per share declines as the amount of earnings per share increases. Consequently, growth rates estimated in this manner are arbitrary since they can be altered simply by extending or reducing the forecast period.

Q. Is Mr. Mulle's claim that the *t*-statistics indicate that his growth rate estimates are valid correct?[56]

A. No. Mr. Mulle's interpretation of the *t*-statistics is wrong. The *t*-statistic for a parameter estimate, such as annual change in earnings per share, does not indicate whether that estimate is accurate or valid. In other words, the *t*-statistic does not measure the extent to which an estimate and the actual value of a parameter are similar. Rather, the *t*-statistic measures the extent to which that estimate <u>differs</u> from an <u>assumed</u> value. The assumed value of that parameter in Mr. Mulle's regressions is zero. Therefore, at best, Mr. Mulle's t-statistics would indicate that his parameter estimates are significantly different than zero. That is, the values for stock price, earnings per share, dividends per share, and book value per share are related to time. This result would be expected for any growing firm.[57] Regardless, since the presence of autocorrelation in Mr. Mulle's growth rate analysis renders his *t*-statistics invalid, even that conclusion is questionable. Therefore, one cannot even assume that his parameter estimates are statistically different from zero.

Moreover, the *t*-statistic alone does not indicate the reliability of Mr. Mulle's forecasts of stock price, earnings per share, dividends per share and book value per share. Forecast reliability is also a function of the distance of the value of the independent variable (i.e., time) used to predict the dependent variable (i.e., stock price, EPS, DPS, and BVPS) from its mean: the farther the value of the independent variable is from its mean, the lower the reliability of the forecast. Gujarati warns that "one should exercise great caution in

---

[56] CIWC Exhibit No. 4.0, pp. 47-48.

'extrapolating' the historical regression line to predict [the expected value of the dependent variable] associated with a given [value of the independent variable] which is far removed from the sample mean."[58] Nevertheless, to forecast his growth rate parameters, Mr. Mulle extrapolated historical regression lines.

Q. What aspect of Mr. Mulle's growth rate estimates is nonsensical?

A. The growth rate Mr. Mulle ultimately estimated for each of his growth rate parameters depends on the number of years of observations he included in the model. For example, Mr. Mulle estimated the growth rate in Aquarion's stock price from eight years of data and dividend growth rate from sixteen years of data. In contrast, Mr. Mulle estimated Connecticut Water Service, Inc.'s rate of stock price growth from sixteen years of data and dividend growth rate from five years of data.[59] That implies that investors consider relevant different time periods of data not only between companies but within companies, which is illogical.

Mr. Mulle's growth rate analysis technique represents a textbook example of a phenomenon known as "data mining." Fischer Black, who was among the most eminent finance scholars, co-author of one of the earliest tests of the CAPM, contributor to its development and co-developer of the Black-Scholes option pricing model, described "data mining" as follows:

---

[57] Nevertheless, regression analysis does not establish causation. Thus, an apparent relationship between time and stock prices does not suggest that time causes stock prices to change. (Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 16).

[58] Gujarati, *Basic Econometrics*, McGraw-Hill, 1978, p. 91.

[59] CIWC Exhibit No. 4.0, Schedule 7, p. 8.

> When a researcher tries many ways to do a study, including various combinations of explanatory factors, various periods, and various models, we often say he is "data mining." If he reports only the more successful runs, we have a hard time interpreting any statistical analysis he does. We worry that he selected, from the many models tried, only the ones that seem to support his conclusions. With enough data mining, all results that seem significant could be just accidental.[60]

In reviewing a study by Fama and French, Black noted the absence of theory for their findings:

> Fama and French also give no reasons for a relation between size and expected return. They might argue that small firms are consistently underpriced because they are "neglected" in a world of large institutional investors. But they do not give us that reason or any other reason. Lack of theory is a tipoff: watch out for data mining![61]

Mr. Mulle offers no explanation why certain time periods are more representative of future growth than others.

Q. Please explain how Mr. Mulle double-counted growth from the issuance of new shares in his dividend growth rate parameter.

A. The DCF model, as it applies to common stocks, includes a parameter for growth in dividends per share. Although many factors affect period-to-period changes in dividend payments, new investment per share remains the single, fundamental source of long-term, sustainable growth in dividends per share. Common equity capital for new investment comes from two sources: reinvested earnings and new common equity offerings. The former directly increases investment per share. The latter only increases investment per

[60] *Emphasis added,* Black, "Beta and Return," Journal of Portfolio Management, Fall 1993, p. 9.

share to the extent that the additional common equity capital raised per new share (i.e., price of new stock) exceeds the average common equity invested per existing share (i.e., book value of existing stock). The increase in investment per share from the issuance of new stock is the result of a very basic mathematical concept: the weighted average. For example, if a company with 1,000 outstanding common shares and $40,000 in common equity investment (i.e., $40 per common share) raised an additional $5,000 of capital through a common stock offering of 100 shares (i.e., $50 per common share) then total common investment would increase to $45,000, total common shares would increase to 1,100 and common equity investment per common share would increase 2.275% to $40.91 (i.e., $45,000 common equity investment ÷ 1,100 common shares).

Q. If the issuance of additional common shares could increase common equity investment per share, why was Mr. Mulle's inclusion of growth from that source improper?

A. Mr. Mulle's growth rate calculations, whether in market value, dividends, earnings or book value, were based on per share changes in those parameters; therefore, those growth rates already included growth from external sources. To illustrate, if the company in the above example also added $2,000 in investment through retention of earnings, which represents a 4.4% increase in common equity investment (i.e., $2,000 in reinvested earnings ÷ $45,000 in common equity investment), the total increase in investment per common share equals 6.7%. (i.e., 2.275% from the new stock issuance plus 4.4% from reinvested earnings). That percentage increase in investment per common share can be

---

[61] Black, "Beta and Return," Journal of Portfolio Management, Fall 1993, p. 9.

calculated directly by dividing the initial investment per common share (i.e., \$40) into the total increase in investment per common share (i.e., (\$47,000 ÷ 1,100) – \$40) which equals 6.8%. Thus, percentage increases in per common share data already include the effects of external common share investment. In contrast, Mr. Mulle's growth rate estimates are the equivalent of adding the 2.275% growth from new stock issuances to the 6.8% in total per share growth.

Q. Why is Mr. Mulle's argument that price appreciation is the primary element of growth for a common stock incorrect?[62]

A. Mr. Mulle's argument is based on the following finite period form of the DCF model which includes future stock price:

$$P = \frac{D_{1,1}}{(1+k)^{x}} + \frac{D_{1,2}}{(1+k)^{x+0.25}} + \frac{D_{1,3}}{(1+k)^{x+0.50}} + \frac{D_{1,4}}{(1+k)^{x+0.75}} + \frac{D_{2,1}}{(1+k)^{x+1.00}} + \frac{D_{2,2}}{(1+k)^{x+1.25}} + \frac{D_{2,3}}{(1+k)^{x+1.50}} + \cdots + \frac{P_n}{(1+k)^{n}} \qquad (1)$$

where $P_n \equiv$ the stock price at the end of period n.

Nevertheless, since each successive stock price is a function of subsequent dividends, it follows that all stock prices are ultimately a function of future dividends alone. Therefore, even if an individual investor's holding period is finite such that he expects to sell the stock at the end of period n at a price P_n, that value is based on the value of the dividends that stock is expected to generate beyond period n. That is, Mr. Mulle's assertion has no validity whatsoever in the context of the value of the stock for the market as a whole. As Equation (1) of Schedule 3.03 shows, the value of a common stock equals the cumulative discounted value of the cash flows it generates, which ultimately must be in the form of dividends, not future stock price.

Q. What are the implications of Mr. Mulle's claim that utility stock prices have grown faster than earnings and dividends since 1942?

A. Mr. Mulle's observation is period specific. Whereas over the 1942-1996 period, stock price growth exceeded dividend growth, over the 1942-1984 period, dividend growth slightly exceeded stock price growth.[63] That is, the entire difference between stock price and dividend growth can be ascribed to the 1985-1996 period. Financial theory and empirical analysis can explain the difference between stock price and dividend growth since 1985. As described previously, stock price is a direct function of dividends and an inverse function of the discount rate. If the discount rate had been constant since 1942 then stock price and dividend growth would have been roughly the same assuming no shift in dividend payout. Because dividend and earnings growth since 1942 are similar, changes in dividend payout did not significantly affect stock price growth. Since dividend and stock price growth were not equal, then it follows that the discount rate declined. Thus, whereas Mr. Mulle argues that historically greater growth in utility stock prices in comparison to utility dividends should translate into higher estimates of the cost of common equity, the opposite is true. Utility stock prices have increased more rapidly than utility dividends because <u>utilities' cost of common equity has declined</u>. Consider the

---

[62] CWIC Exhibit No. 4.0, pp. 40-41.
[63] CIWC Exhibit No. 4.0, Schedule 7, p. 10.

general decline in required rates of return implied in the difference between U.S. Treasury bond yields at the end of 1984 and today. In December 1984, the yield on thirty-year U.S. Treasury bonds averaged 11.5%.[64] Today, thirty-year U.S. Treasury bonds are yielding approximately 6.43%.[65] That suggests that continued stock price growth in excess of dividend and earnings growth would be indicative of further declines in the cost of common equity.

Q. Please demonstrate how stock price growth in excess of earnings and dividend per share growth, indicates a declining cost of common equity.

A. Assume that a stock priced at $20 per share is expected to pay a dividend of $1 per share and has an expected dividend growth rate of 5%. The cost of common equity for that stock would equal 10% or:

$$k = \frac{D_1}{P_0} + g = \frac{\$1}{\$20} + 5\% = 10\%$$

where k ≡ the cost of common equity;

P_0 ≡ the stock price at the beginning of the first period;

D_1 ≡ the expected dividend during the first period; and

g ≡ the expected dividend growth rate.

Next, assume that the stock price appreciates 5% during the year to $21. The realized return on common equity would equal the cost of common equity, or 10%, as follows:

[64] Federal Reserve Board, *Releases and Historical Data*,

$$ER = \frac{D_1 + P_1 - P_0}{P_0} + g = \frac{\$1 + \$21 - \$20}{\$20} = 10\%$$

where $ER \equiv$ the earned rate of return on common equity; and

$P_1 \equiv$ the stock price at the end of the first period.

If the expected dividend growth rate remained 5%, the cost of common equity for the next year would remain 10% or:

$$k = \frac{\$1.05}{\$21} + 5\% = 10\%$$

In contrast, assume the stock price appreciates 10% during the year. As a result, the earned rate of return on common equity would equal 15% or:

$$ER = \frac{\$1 + \$22 - \$20}{\$20} = 15\%$$

Although the earned rate of return would increase as a result of the greater appreciation in stock price, the expected rate of return to the investor that bought that stock at \$22 at the end of the first period rather than \$21 would decline to 9.8% as follows:

$$k = \frac{\$1.05}{\$22} + 5\% = 9.8\%$$

In the above example, the decline in the cost of common equity (0.2%) is less than the increase in the earned rate of return (5%) because the effects of the former is spread over

www.bog.frb.fed.us/releases/H15/data/m/tcm30y.txt.

[65] Federal Reserve Board, *Federal Reserve Statistical Release*, August 6, 1999.

an infinite time horizon whereas the effect of the latter is limited to one year.[66] The above example demonstrates that when a stock price is appreciating at a rate that exceeds the dividend growth rate, the underlying cost of common equity is declining.

Q. Please summarize the error in Mr. Mulle's argument that price appreciation is the primary element of growth for a common stock.

A. In summary, Mr. Mulle's claim that price appreciation is the primary element of growth for a common stock is incorrect from a market perspective. His claim wrongly implies that stock price appreciation is the engine that creates wealth. The converse is true. As the DCF model demonstrates, stock price appreciation <u>may</u> be a reflection of growing cash flows that wealth producing assets generate.[67] However, the DCF model also demonstrates that stock price appreciation may be a reflection of a decline in the rate of return at which the cash flows of wealth producing assets are discounted. The above example demonstrates that changes in stock prices that are related to changes in the discount rate do not result in the creation of aggregate wealth at all. Rather, they represent a transfer of wealth between stockholders. The economic benefits one stockholder realizes as a result of a stock transaction equals the economic losses of the other investor in that transaction. Transfers of wealth do not create wealth and when wealth is not created, economic growth does not occur.

---

[66] If the stock price increased to $22.05 at the end of the second period, increasing the cost of common equity to 10%, the earned rate of return in the second year would be 5%.

[67] Common stocks are not wealth producing assets from an economic perspective. Rather, common stocks represent an ownership interest in wealth producing assets.

"Book Value" DCF Analysis

Q. Please describe the errors in Mr. Mulle's "book value" DCF analysis.

A. Mr. Mulle's "book value" DCF model substitutes book value of common equity per share for stock price to measure the dividend yield component in the DCF model.[68] That substitution has both theoretical and empirical flaws. Financial theory provides no basis for Mr. Mulle's modification of the DCF model. Financial theory recognizes an inverse relationship between the price of common stock and the investor required rate of return on common equity. If the investor required rate of return on common equity declined, all other factors held constant, the price of common stock would increase, which, in turn, would cause the measured cost of common equity derived from the DCF model to decline as well. In contrast, book value of common equity does not vary with the investor required rate of return on common equity. Therefore, the cost of equity estimate derived from Mr. Mulle's "book value" DCF model would remain constant despite changes to the investor required rate of return on common equity. In addition, adoption of Mr. Mulle's "book value" DCF encompasses the same shortcomings applicable to comparable earnings analysis: 1) it makes the determination of original cost rate base moot; and 2) its application is based on a faulty model of the relationship between regulated earnings and market value.

Q. Mr. Mulle implies that the "book value" DCF approach is necessary because the underlying assumptions of the DCF model (i.e., constant growth in dividends,

[68] CIWC Exhibit No. 4.0, p. 43.

earnings, book value and price per share; constant dividend payout; and market price equal to book value) do not hold true.[69] Please comment.

A. Contrary to Mr. Mulle's assertion, the constant growth DCF model does not assume market price equals book value per common share. However it does assume that investors expect a firm's earnings, dividends and book and market values of common equity to grow, on average, at the same rate over the long-term. Nevertheless, Mr. Mulle does not explain how his "book value" DCF resolves the alleged problem of non-constant growth in dividends, earnings and book and market value per share. To the contrary, as a constant growth model, his "book value" DCF would make the same assumption regarding the equality in growth of those four components as the theoretically sound DCF model.

CAPM Analysis

Q. Please comment on Mr. Mulle's CAPM analysis.

A. Mr. Mulle estimated the long-term risk-free rate using a blend of "futures" long-term U.S. Treasury note and bond yields.[70] As described previously, U. S. Treasury bond yields currently overstate the long-term risk-free rate. Whenever the beta of the given security is less than one, over-estimating the risk-free rate results in upward bias in that security's cost of common equity estimate.

[69] CIWC Exhibit No. 4.0, p. 43.
[70] CIWC Exhibit 4.0, p. 36.

Q. Mr. Mulle claims that Ibbotson recommends using a long-term rate to estimate the risk-free rate when the goal of the analysis is the determination of the cost of capital. Is that correct?

A. No. Ibbotson Associates describe the CAPM mathematically as follows:

$$k_s = r_f + (\beta_s \times \text{ERP})$$

where k_s ≡ the cost of equity for company *s*;

r_f ≡ the expected return on the riskless asset;

ERP ≡ the expected equity risk premium, or the amount by which investors expect the future return on equity to exceed that on the riskless asset; and

β_s ≡ the beta of the stock of company *s*.[71]

With regard to the equity risk premium and the riskless asset Ibbotson Associates state:

> It [the expected equity risk premium] can be calculated by subtracting the long-term average of the income return on the riskless asset from the long-term average stock market return (measured over the same period as for the riskless asset). The maturity (or duration) of the riskless asset from which $\mathbf{r_f}$ is taken must be the same as that used to estimate **ERP**.[72]

Thus, Ibbotson Associates state, and I agree, that the term to maturity of the riskless asset used to measure the risk-free rate (i.e., r_f) of return should match the term to maturity of the riskless asset used to calculate the equity risk premium (i.e., **ERP**). Ibbotson Associates do not recommend use of long-term U.S. Treasury bond yields to estimate the risk-free rate.

Q. Please comment on Mr. Mulle's market pressure adjustment to his CAPM estimate of the cost of common equity.

A. The market pressure adjustment made by Mr. Mulle is completely inappropriate. "Market pressure" refers to a temporary reduction in stock price that is allegedly caused by the issuance of additional shares of common equity. A reduction in stock price would force a company to issue more shares to raise a certain amount of capital. The issuance of additional shares would reduce earnings and cash flow per share. However, as a group, common stockholders do not suffer any losses because market pressure does not create a difference between the amount of capital contributed by new shareholders and the amount available to a company for investment. Market pressure would impose a cost in the form of diluted ownership on existing common stockholders that did not purchase the new shares; however, stockholders that purchased the new shares imposed that cost. The cost of common equity should not include compensation for transfers of wealth among stockholders.

Q. Can you illustrate how the transfer of wealth between stockholders occurs?

A. Yes. Consider the following example: investor A owns 200 shares of a utility worth $5 per share; therefore, the total market value of her holdings equals $1,000. The utility has no other investors. The utility needs to raise an additional $500 in common equity to invest in an asset equal to its current holdings in risk and expected return. Consequently, the additional investment would increase the total market value of the utility to $1,500.

[71] Ibbotson Associates, *SBBI 1999 Yearbook*, p. 152.

However, market pressure causes the price per share to temporarily fall to \$4.75, which investor B pays to purchase the entire share issuance. At the \$4.75 per share, the utility must issue 105.3 shares of new common stock to raise \$500. Given the value of the utility equals \$1500, the value per common share now equals:

$$\$1500 \div 305.3 \text{ shares} = \$4.91 \text{ per share.}$$

The 200 common shares investor A owns is now worth:

$$\$4.91 \text{ per share} \times 200 \text{ shares} = \$982.$$

The value of investor B's common shares will equal:

$$\$4.91 \times 105.3 \text{ shares} = \$518.$$

Thus, the \$18 investor A lost in total value accrued to investor B.

Risk Premium Analysis

Q. Please describe the errors in Mr. Mulle's risk premium analysis.

A. Although Mr. Mulle's risk premium analysis contains many errors, I will only address three: 1) inappropriate use of an A-rated utility bond yield; 2) improper estimate of the common equity risk premium; and 3) pointless derivation of "expected" interest rates and interest rate premiums.

---

[72] Ibbotson Associates, *SBBI 1999 Yearbook*, p. 154.

Q. Please explain why use of an A-rated utility bond yield by Mr. Mulle in his risk premium analysis is inappropriate.

A. Mr. Mulle's risk premium model is actually a CAPM derivation using the yield on A-rated utility bonds as an inappropriate proxy for the risk-free rate. Mr. Mulle's risk premium model can be depicted mathematically as follows:

$$R_j = R_{A\text{-}bond} + \beta_j \times (R_m - R_{A\text{-}bond})$$

where R_j ≡ the required rate of return for security j;

$R_{A\text{-}bond}$ ≡ the A-rated utility bond rate;

R_m ≡ the expected rate of return for the market portfolio; and

β_j ≡ the measure of risk for security j.

The above model is almost identical to the CAPM except that it substitutes a risky debt rate, $R_{A\text{-}bond}$, for the risk-free rate, R_f. That substitution has no basis in financial theory. Since the cost of risky debt, $R_{A\text{-}bond}$, exceeds the risk-free rate, R_f, Mr. Mulle's risk premium model overestimates the cost of common equity for companies with betas less than one (which includes all of the water utilities in his comparison group).

Q. Why is Mr. Mulle's common equity risk premium estimate improper?

A. To calculate the common equity risk premium, Mr. Mulle subtracted the current (at the time of his analysis) yield on A-rated utility bonds, 6.55%, from a 13.60% expected return on the S&P 500.[73] He then multiplied the implied common equity risk premium, 7.05%, by a 0.65 beta and subtracted 0.30% for debt issuance costs to arrive at his proposed market risk premium over A-rated utility bond yields of 4.25%. Mr. Mulle claims that his beta measure of 0.65 is typical for a utility and was obtained by averaging the latest reported utility betas given by Value Line at the time of his analysis (March 1999).[74] However, the beta for his sample, which is allegedly comparable to CIWC in risk, is 0.52, not 0.65.[75] When Mr. Mulle's 7.05% market risk premium is multiplied with the 0.52 beta for his water utility sample and the 0.30% debt issuance cost adjustment is subtracted, the common equity risk premium over A-rated utility bond yields equals 3.36%. Therefore, Mr. Mulle's 4.25% common equity risk premium is exaggerated.

Q. Please explain why Mr. Mulle's calculation of expected interest rate premiums does not provide useful information.

A. On page 4 of his Schedule 5, Mr. Mulle presents a series of expected risk premiums that he used to estimate the A-rated utility bond yield which he obtained by calculating the implied interest rate premiums p_n between interest rates for various bonds and then summing them as follows:[76]

$$i_d = i_1 + p_1 + p_2 + p_3 + p_4 \qquad (2)$$

[73] CIWC Exhibit 4.0, p. 31.
[74] Company response to Staff Data Request FD-2.11.
[75] CIWC Exhibit 4.0, Schedule 6, page 1 of 3.
[76] CIWC Exhibit 4.0, revised pp. 29 & 30 (Company response to Staff Data Request FD-2.15).

where $i_d \equiv$ derived interest rate on A-rated utility bonds;

$i_1 \equiv$ the expected real interest rate; and

$p \equiv$ implied interest rate premiums 1 through 4.

Each interest rate premium, p_n, equals the difference between two "expected" interest rates, $(i_{n+1} - i_n)$.[77] Substituting $(i_{n+1} - i_n)$ for each interest rate premium, p_n, in Equation (2) above produces the following equation:

$$i_d = i_1 + (i_2 - i_1) + (i_3 - i_2) + (i_4 - i_3) + (i_5 - i_4)$$

which, simplifies to:

$$i_d = i_5$$

where $i_5 \equiv$ the estimated yield on A-rated utility bonds.

Thus, the only necessary input for Mr. Mulle's derived yield on A-rated utility bonds is an observed yield on A-rated utility bonds.

CIWC Risk

Q. Please comment on Mr. Mulle's claim that "business risk is much higher at CIWC, than in most of the comparison group."[78]

[77] The "expected" interest rates are 1) a real rate of interest; 2) a U.S. Treasury bill rate; 3) a nominal yield on long-term U.S. Treasury bonds; 4) a AAA-rated corporate bond rate; and 5) an A-rated utility bond rate. (CIWC Ex. 4.0, Schedule 5, pp. 4-6)

[78] CIWC Exhibit 4.0, p. 22.

A. I have not conducted an independent analysis of the business risk of the water utilities that comprise Mr. Mulle's comparison group. Therefore, I have no opinion regarding its business risk in relation to CIWC. However, the variability analysis performed by Mr. Mulle to assess business risk begs comment. Mr. Mulle largely bases his conclusion regarding CIWC's relative business risk on a comparison of its variability of pre-tax return on total capital to that of his water sample.[79] That ratio shows that CIWC's business risk is no more than, if not less than, that of his sample. To reach the opposite conclusion, Mr. Mulle eliminated Aquarion Company and E'Town Corp. from his sample average pre-tax return variability index.[80] Eliminating those companies to evaluate the relative business risk of Mr. Mulle's sample and CIWC is improper.

Q. Mr. Mulle claims that he excluded Aquarion Company and E'Town Corp. from his business risk comparison due to their supposed "significantly and consistently higher variability" than the sample.[81] Please explain why eliminating those companies to evaluate the relative business risk of the sample and CIWC on that basis is improper.

A. If Mr. Mulle's pre-tax variability index is a valid and reliable measure of business risk, then: 1) the business risk of Aquarion Company and E'Town Corporation are relatively high in comparison to the other water utilities in Mr. Mulle's sample and CIWC; 2) the cost of common equity of Aquarion Company and E'Town Corporation would reflect that relatively high business risk; 3) the average cost of common equity of the entire sample,

[79] CIWC Exhibit 4.0, p. 22.
[80] CIWC Exhibit 4.0, Schedule 9, p. 1.

including Aquarion Company and E'Town Corporation, would reflect the relatively high business risk of those two companies; 4) the business risk of CIWC is lower that that of the entire sample, which includes Aquarion Company and E'Town Corporation; and 5) CIWC's cost of common equity should be adjusted downward to reflect its lower business risk. Conversely, if the pre-tax return variability index does not accurately and reliably measure the business risk of Aquarion Company and E'Town Corporation, then the ability of that index to measure the business risk of the remaining utilities in the sample and CIWC is questionable at best.

Q. Mr. Mulle implies that CIWC's earned rate of return on common equity, which he describes as "considerably less than the levels generally authorized over the past ten years for the comparison group" also indicates that CIWC has greater risk than his sample.[82] Do you agree with this implication?

A. Not necessarily. A utility's earned rate of return is a function of numerous factors, including the allowed return on rate base. That, in turn, is a function of the risk of the utility. Utilities with lower risk should be allowed lower rates of return which would lead to lower earned rates of return, all other factors equal. Therefore, a lower earned rate of return could indicate lower risk, not higher risk.

Q. Please comment on Mr. Mulle's claim that "With the latest amendments to the Safe Drinking Water Act [SDWA] and monthly revisions to the standards still being set

---

[81] CIWC Exhibit 4.0, Schedule 9, p. 1.
[82] CIWC Exhibit 4.0, p. 12.

pursuant to those amendments, the purchasers of water utility bonds are aware of ... more stringent credit criteria in the water utility industry."[83]

A. Standard & Poor's does not seem to agree with Mr. Mulle's assessment of the latest amendment to the SDWA. In November 1998, Standard & Poor's stated:

> The U.S. investor-owned water utility industry, benefiting from a sound business profile, a reasonable financial performance, and a reduction in capital-intensive regulations, is expected to maintain its strong credit quality. Previous concerns regarding the stability of the industry's credit quality during periods of heavy capital spending to meet regulatory requirements have waned throughout the 1990s as a result of the completion of most major capital expenditure programs and a reduction in regulatory risk with the Safe Drinking Water Act (SDWA) amendment of 1996. Since the passage of the SDWA in 1974, and amendments made to the act in 1986, much of the industry's focus had been on compliance with regulations. However, the 1996 version embraced additional regulation based on sound scientific testing that eliminates unnecessary water filtration requirements. Thus, the industry's managements will not be distracted by demanding environmental laws and are expected to use capital more effectively.[84]

Nowhere in that report does Standard & Poor's state that the amended SDWA has led them to tighten credit criteria, which would be inconsistent with Standard & Poor's conclusion that the amended SDWA reduces regulatory risk.

Q. Mr. Mulle presents what he describes as Standard & Poor's financial benchmarks.[85] Are those financial benchmarks accurate?

A. They were in July 1994.[86] However, Standard & Poor's no longer publishes financial benchmarks by utility industry. Instead, Standard & Poor's publishes one set of

[83] CIWC Exhibit 4.0, p. 14.
[84] Standard & Poor's, *Global Sector Review*, vol. 8, November 1998, p. 287.
[85] CIWC Exhibit 4.0, p. 51 and Schedule 2.
[86] Standard & Poor's, *Global Sector Review*, July 1994, p. 153.

benchmarks for electric, gas, and water utilities with differences amongst utilities reflected in business position scores.[87] Standard & Poor's has assigned a business position of 2, 3, or 4 to all the water utilities that it rates.[88] The pretax interest coverage benchmarks range from 2.3 to 2.9x for utilities with a business position of 2, 2.8 to 3.4x for utilities with a business position of 3, and 3.3 to 4.0x for utilities with a business position of 4. On an industry basis, Standard & Poor's provides mean and median financial ratios by debt rating. The mean pre-tax interest ratio for the nine water utilities that Standard & Poor's rates as A equals 2.87.[89]

Q. Does this conclude your direct testimony?

A. Yes, it does.

[87] Standard & Poor's, *Utilities & Perspectives*, vol. 6, no. 25, June 21, 1999, pp. 1 and 3.
[88] Standard & Poor's, *Global Utilities Rating Service: Financial Statistics 12 Months Ended December 31, 1998*, June 1999, p. 31.
[89] Standard & Poor's, *Global Utilities Rating Service: Financial Statistics 12 Months Ended December 31, 1998*, June 1999, p. 14.

CONSUMERS ILLINOIS WATER COMPANY

Capital Structure

Company Proposal

Average 2000

Component	Amount	Ratio
Short-Term Debt	$ 1,500,000	2.02%
Long-Term Debt	35,476,572	47.89
Preferred Stock	398,777	0.54
Common Equity	36,709,592	49.55
Total	$ 74,084,941	100.00%

Staff Proposal

Average 2000

Component	Amount	Ratio
Short-Term Debt	$ 1,469,410	1.98 %
Long-Term Debt	35,476,572	47.94
Preferred Stock	398,777	0.54
Common Equity	36,659,950	49.54
Total	$ 74,004,709	100.00%

Sources: CIWC Schedule D-1, p. 1.
Consumers Water Company, *Annual Report of Water and/or Sewer Utilities*, December 31, 1998.

CONSUMERS ILLINOIS WATER COMPANY

Comparable Sample

Company	Factor 1	Factor 2	Factor 3	Factor 4	Cumulative Distance
United Water Resources, Inc.	-1.567	-0.665	1.141	-0.771	1.149
Idaho Power Company	-0.308	0.159	1.276	-1.213	1.590
E'Town Corp.	-1.349	-1.456	1.620	0.047	1.610
Potomac Electric Power Company	-1.033	0.083	0.888	-0.300	1.886
Hawaiian Electric Industries, Inc.	-1.449	-0.425	0.356	-0.430	1.964
Public Utility Sample Average	-1.141	-0.461	1.056	-0.533	

Water Utility Sample

Company	Factor 1	Factor 2	Factor 3	Factor 4	Cumulative Distance
United Water Resources, Inc.	-1.567	-0.665	1.141	-0.771	1.149
E'Town Corp.	-1.349	-1.456	1.620	0.047	1.610
Middlesex Water Company	-0.694	-0.473	1.263	0.499	2.177
American States Water Company	-0.430	-0.967	0.570	0.576	2.544
American Water Works, Inc.	-1.436	-0.837	1.481	1.053	2.565
Connecticut Water Service, Inc.	-0.371	-0.587	1.750	1.040	2.658
Water Utility Sample Average	-0.975	-0.831	1.304	0.407	
Consumers Illinois Water Co.	-1.171	-0.993	1.906	-1.458	

Source: Standard & Poor's *Utility Compustat.*

CONSUMERS ILLINOIS WATER COMPANY

The Discounted Cash Flow Model

Discounted cash flow (DCF) theory posits the value of an asset equals the sum of the future cash flows it generates, discounted by the investor-required rate of return. Specifically, the market value of common stock equals the present value of the expected stream of future dividends.

In its general form, the DCF model for a stock paying dividends quarterly can be mathematically stated as follows:

$$\begin{aligned} P = {} & \frac{D_{1,1}}{(1+k)^{x}} + \frac{D_{1,2}}{(1+k)^{x+0.25}} + \frac{D_{1,3}}{(1+k)^{x+0.50}} + \frac{D_{1,4}}{(1+k)^{x+0.75}} + \frac{D_{2,1}}{(1+k)^{x+1.00}} \\ & + \frac{D_{2,2}}{(1+k)^{x+1.25}} + \frac{D_{2,3}}{(1+k)^{x+1.50}} + \frac{D_{2,4}}{(1+k)^{x+1.75}} + \cdots + \frac{D_{t,q}}{(1+k)^{x+m}} + \cdots \end{aligned} \tag{1}$$

where P $\equiv$ the current market value;

$D_{t,q}$ $\equiv$ the expected dividend at the end of quarter q in year t, where $q = 1$ to 4 and $t = 1$ to ∞;

k $\equiv$ the cost of common equity;

x $\equiv$ the elapsed time between the stock observation and first dividend payment dates, in years; and

m $= t - 1 + 0.25\ (q - 1)$.

If dividends grow annually at a constant rate then,

$$D_{t-1} = D_{t-1,q}(1+g) \tag{2}$$

where: $g \equiv$ the expected growth rate in dividends.

Substituting Equation (2) into Equation (1) produces:

$$P = \frac{D_{0,1}(1+g)}{(1+k)^{x}} + \frac{D_{0,2}(1+g)}{(1+k)^{x+0.25}} + \frac{D_{0,3}(1+g)}{(1+k)^{x+0.50}} + \frac{D_{0,4}(1+g)}{(1+k)^{x+0.75}} + \frac{D_{0,1}(1+g)^2}{(1+k)^{x+1.00}}$$
$$+ \frac{D_{0,2}(1+g)^2}{(1+k)^{x+1.25}} + \frac{D_{0,2}(1+g)^2}{(1+k)^{x+1.50}} + \frac{D_{0,4}(1+g)^2}{(1+k)^{x+1.75}} + \cdots + \frac{D_{0,4}(1+g)^t}{(1+k)^{x+t-0.25}} + \cdots \tag{3}$$

Equation (3) has an infinite number of terms (t = 1 to ∞). To obtain a finite number of terms, first multiply each side of the equation by the quantity $(1+k)/(1+g)$:

$$\frac{P(1+k)}{(1+g)} = \frac{D_{0,1}(1+g)(1+k)}{(1+g)(1+k)^{x}} + \frac{D_{0,2}(1+g)(1+k)}{(1+g)(1+k)^{x+0.25}} + \frac{D_{0,3}(1+g)(1+k)}{(1+g)(1+k)^{x+0.50}} + \frac{D_{0,4}(1+g)(1+k)}{(1+g)(1+k)^{x+0.75}} + \frac{D_{0,1}(1+g)^2(1+k)}{(1+g)(1+k)^{x+1.00}}$$
$$+ \frac{D_{0,2}(1+g)^2(1+k)}{(1+g)(1+k)^{x+1.25}} + \frac{D_{0,2}(1+g)^2(1+k)}{(1+g)(1+k)^{x+1.50}} + \frac{D_{0,4}(1+g)^2(1+k)}{(1+g)(1+k)^{x+1.75}} + \cdots + \frac{D_{0,4}(1+g)^t(1+k)}{(1+g)(1+k)^{x+t-0.25}} + \cdots \tag{4}$$

Eliminating redundant terms produces:

$$\frac{P(1+k)}{(1+g)} = D_{0,1}(1+k)^{1-x} + D_{0,2}(1+k)^{1-(x+0.25)} + D_{0,3}(1+k)^{1-(x+0.50)} + D_{0,4}(1+k)^{1-(x+0.75)}$$
$$+ \frac{D_{0,1}(1+g)}{(1+k)^{x}} + \frac{D_{0,2}(1+g)}{(1+k)^{x+0.25}} + \frac{D_{0,3}(1+g)}{(1+k)^{x+0.50}} + \frac{D_{0,4}(1+g)}{(1+k)^{x+0.75}} + \cdots + \frac{D_{0,4}(1+g)^{t-1}}{(1+k)^{x+t-1.25}} + \cdots \tag{5}$$

Next, subtract Equation (3) from Equation (5):

$$\frac{P(1+k)}{(1+g)} - P = D_{0,1}(1+k)^{1-x} + D_{0,2}(1+k)^{1-(x+0.25)} + D_{0,3}(1+k)^{1-(x+0.50)} + D_{0,4}(1+k)^{1-(x+0.75)}$$
$$- \frac{D_{0,1}(1+g)^t}{(1+k)^{x+t-1.00}} - \frac{D_{0,2}(1+g)^t}{(1+k)^{x+t-0.75}} - \frac{D_{0,3}(1+g)^t}{(1+k)^{x+t-050}} - \frac{D_{0,4}(1+g)^t}{(1+k)^{x+t-0.25}}. \tag{6}$$

For $k > g$, as $t \to \infty$, $\frac{D_{0,1}(1+g)^t}{(1+k)^{x+t-1.00}}$, $\frac{D_{0,2}(1+g)^t}{(1+k)^{x+t-0.75}}$, $\frac{D_{0,3}(1+g)^t}{(1+k)^{x+t-0.50}}$, and $\frac{D_{0,4}(1+g)^t}{(1+k)^{x+t-0.25}} \to 0$.

Therefore,

$$\begin{aligned}\frac{P(1+k)}{(1+g)} - P &= D_{0,1}(1+k)^{1-x} + D_{0,2}(1+k)^{1-(x+0.25)} + D_{0,3}(1+k)^{1-(x+0.50)} + D_{0,4}(1+k)^{1-(x+0.75)} \\ &= \sum_{q=1}^{4} D_{0,1}(1+k)^{1-[x+0.25(q-1)]}.\end{aligned} \tag{7}$$

The expression $(1+k)^{1-[x+0.25(q-1)]}$ is a future value interest factor. It measures the rate of return a dividend received in quarter q will earn if reinvested for $1-[x+0.25(q-1)]$ periods at the periodic opportunity cost k. A future value interest factor converts nominal to time values, thereby permitting the summation of cash flows paid at different times.

Multiplying each side by the expression $(1+g)$ produces:

$$P(1+k) \; - \; P(1+g) \; = \; \sum_{q=1}^{4} D_{0,q}(1+k)^{1-[x+0.25(q-1)]}. \tag{8}$$

Finally, solving for k results in:

$$k \; = \; \frac{\sum_{q=1}^{4} D_{0,q}(1+g)(1+k)^{1-[x+0.25(q-1)]}}{P} \; + \; g. \tag{9}$$

CONSUMERS ILLINOIS WATER COMPANY

Growth Rate Estimates and Ranges

Company	Zacks Earnings	IBES Earnings
American States Water Company	4.40%	3.00%
American Water Works Company	7.50	6.36
Connecticut Water Service, Inc.	3.00	3.00
E'Town Corp.	3.00	3.00
Hawaiian Electric Industries, Inc.	3.43	3.27
Idaho Power Company	3.60	3.60
Middlesex Water Company	3.00	3.00
Potomac Electric Power Company	4.06	2.89
United Water Resources, Inc.	5.00	5.17

Company	Low-End Earnings	High-End Earnings
American States Water Company	3.00%	4.40%
American Water Works Company	6.36	7.50
Connecticut Water Service, Inc.	3.00	3.00
E'Town Corp.	3.00	3.00
Hawaiian Electric Industries, Inc.	3.27	3.43
Idaho Power Company	3.60	3.60
Middlesex Water Company	3.00	3.00
Potomac Electric Power Company	2.89	4.06
United Water Resources, Inc.	5.00	5.17

Sources: *Zacks Investment Research*, August 4, 1998.
Institutional Brokers Estimate System, July 15, 1999.

Docket No. 99-0288
ICC Staff Exhibit 3.0
Schedule 3.05

CONSUMERS ILLINOIS WATER COMPANY

Quarterly Dividends and Stock Prices
as of August 6, 1999

	Current Dividend					
Company	$D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
American States Water Company	\$0.315	\$0.320	\$0.320	\$0.320	12/1/99	\$32.3750
American Water Works Company	0.205	0.215	0.215	0.215	11/16/99	29.5000
Connecticut Water Service, Inc.	0.293	0.293	0.293	0.293	9/15/99	29.2500
E'Town Corp.	0.510	0.510	0.510	0.510	9/30/99	48.5625
Hawaiian Electric Industries, Inc.	0.620	0.620	0.620	0.620	12/10/99	35.0625
Idaho Power Company	0.465	0.465	0.465	0.465	11/20/99	31.0625
Middlesex Water Company	0.285	0.295	0.295	0.295	9/1/99	25.5625
Potomac Electric Power Company	0.415	0.415	0.415	0.415	9/30/99	27.8750
United Water Resources, Inc.	0.230	0.240	0.240	0.240	9/1/99	23.1250

Sources: *The Wall Street Journal*, August 9, 1999.
Standard & Poor's, *Utility Compustat.*
Standard & Poor's, *Stock Guide, July 1999.*
http://www.cnnfn.com
http://quote.yahoo.com
Value Line Investment Survey.

CONSUMERS ILLINOIS WATER COMPANY

Expected Quarterly Dividends

Company	Low-End Estimates $D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
American States Water Company	$0.320	$0.330	$0.330	$0.330
American Water Works Company	0.215	0.229	0.229	0.229
Connecticut Water Service, Inc.	0.293	0.293	0.293	0.293
E'Town Corp.	0.525	0.525	0.525	0.525
Hawaiian Electric Industries, Inc.	0.640	0.640	0.640	0.640
Idaho Power Company	0.482	0.482	0.482	0.482
Middlesex Water Company	0.295	0.304	0.304	0.304
Potomac Electric Power Company	0.427	0.427	0.427	0.427
United Water Resources, Inc.	0.240	0.252	0.252	0.252

Company	High-End Estimates $D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
American States Water Company	$0.320	$0.334	$0.334	$0.334
American Water Works Company	0.215	0.231	0.231	0.231
Connecticut Water Service, Inc.	0.293	0.293	0.293	0.293
E'Town Corp.	0.525	0.525	0.525	0.525
Hawaiian Electric Industries, Inc.	0.641	0.641	0.641	0.641
Idaho Power Company	0.482	0.482	0.482	0.482
Middlesex Water Company	0.295	0.304	0.304	0.304
Potomac Electric Power Company	0.432	0.432	0.432	0.432
United Water Resources, Inc.	0.240	0.252	0.252	0.252

Sources: Schedules 3.04 and 3.05.

CONSUMERS ILLINOIS WATER COMPANY

DCF Cost of Common Equity Estimates

Public Utility Sample

Company	Low-End Estimate	High-End Estimate
United Water Resources, Inc.	9.53%	9.71%
Idaho Power Company	10.01	10.01
E'Town Corp.	7.48	7.48
Potomac Electric Power Company	9.94	11.32
Hawaiian Electric Industries, Inc.	10.79	10.97
Average	9.55%	9.90%

Water Utility Sample

Company	Low-End Estimate	High-End Estimate
American States Water Company	7.13%	8.59%
American Water Works Company	9.51	10.69
Connecticut Water Service, Inc.	7.15	7.15
E'Town Corp.	7.48	7.48
Middlesex Water Company	7.92	7.92
United Water Resources, Inc.	9.53	9.71
Average	8.12%	8.59%

CONSUMERS ILLINOIS WATER COMPANY

Risk Premium Cost of Equity Estimates

Public Utility Sample

Risk-Free Rate Proxy	Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
U.S. Treasury Bills	5.29%	+	0.49	×	(15.00% – 5.29%)	=	10.05%
U.S. Treasury Bonds	6.66%	+	0.49	×	(15.00% – 6.66%)	=	10.75%

Water Utility Sample

Risk-Free Rate Proxy	Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
U.S. Treasury Bills	5.29%	+	0.53	×	(15.00% – 5.29%)	=	10.44%
U.S. Treasury Bonds	6.66%	+	0.53	×	(15.00% – 6.66%)	=	11.08%

CONSUMERS ILLINOIS WATER COMPANY

Cost of Common Equity Summary

Discounted Cash Flow Model

	Low-End Estimate	High-End Estimate	Average
Comparable Sample[1]	10.07%	10.50%	10.29%

Risk Premium Model

	Estimate
Comparable Sample	10.05%

[1] Excludes estimates for E'Town Corporation.

Source: Schedules 3.07 and 3.09.

CONSUMERS ILLINOIS WATER COMPANY

Comparable Sample
1998 Ratios

Company	Common Equity Ratio	Expenditures to Net Utility Plant	Fixed Asset Turnover	Earnings Stability
United Water Resources, Inc.	38.06%	.0785	.2312	.2011
Idaho Power Company	44.20	.0519	.4124	.4055
E'Town Corp.	44.78	.0711	.1847	.8410
Potomac Electric Power Company	46.80	.0456	.2833	.1752
Hawaiian Electric Industries, Inc.	68.80	.6078	.3451	.3686
Public Utility Sample Average	48.53%	.1710	.2913	.3983

Water Utility Sample
1998 Ratios

Company	Common Equity Ratio	Expenditures to Net Utility Plant	Fixed Asset Turnover	Earnings Stability
United Water Resources, Inc.	38.06%	.0785	.2312	.2011
E'Town Corp.	44.78	.0711	.1847	.8410
Middlesex Water Company	44.56	.1651	.2249	.7813
American States Water Company	55.68	.1008	.2677	.4180
American Water Works, Inc.	83.04	.0917	.2518	.6135
Connecticut Water Service, Inc.	47.80	.0428	.1696	.2589
Water Utility Sample Average	52.32%	.0917	.2216	.5190
Consumers Illinois Water Co.	49.24%	.0500	.1721	.3418

Sources: Company 1998 Annual Reports to the SEC Form 10-Ks and 1998 Quarterly Reports to the SEC - Form 10-Q.
CIWC 1998 Annual Report - Company response to Staff Data Request FD-4.01.

Sources: Company 1998 Annual Reports to the SEC Form 10-Ks and 1998 Quarterly Reports to the SEC - Form 10-Q.
CIWC 1998 Annual Report - Company response to Staff Data Request FD-4.01.

CONSUMERS ILLINOIS WATER COMPANY

Overall Cost of Capital

Capital Component	Ratio	Cost	Weighted Cost
Short-Term Debt	1.98%	7.15%	0.14%
Long-Term Debt	47.94	8.71	4.18
Preferred Stock	0.54	5.52	0.03
Common Equity	49.54	10.00-11.00%	4.95 -5.45%
Total	100.00%		9.30 - 9.80%

Overall Cost of Capital Midpoint Estimate = 9.55%
(Based on cost of common equity midpoint estimate of 10.50%)

Introduction

Q. Please state your name and business address.

A. My name is Janis Freetly. My business address is 527 East Capitol Avenue, P.O. Box 19280, Springfield, Illinois 62794-9280.

Q. What is your current position with the Illinois Commerce Commission (ICC)?

A. I am currently employed as a Financial Analyst in the Finance Department of the Financial Analysis Division.

Q. Please describe your qualifications and background.

A. In May of 1995, I earned a Bachelor of Business degree in Marketing from Western Illinois University. I received a Master of Business Administration degree, with a concentration in Finance, from Western Illinois University in May of 1998. I have been employed by the ICC in my present position since September of 1998.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present the overall cost of capital and to recommend a fair rate of return on rate base for Consumers Illinois Water Company (CIWC or the Company). I will also respond to the direct testimony of Mr. Henry G. Mulle.

Cost of Capital

Q. Please summarize your cost of capital findings.

A. The overall cost of capital for CIWC ranges from 9.30% to 9.80%, with a midpoint estimate of 9.55%, as shown on Schedule 3.12 .

Q. What is the overall cost of capital for a public utility?

A. The overall cost of capital is the sum of the component costs of the capital structure (i.e., debt, preferred stock, and common equity) after each is weighted by its proportion to total capital. It represents the rate of return the utility needs to earn on its assets to satisfy contractual obligations to, or the market requirements of, its investors.

Q. Why is it important to determine a reasonable cost of capital for a public utility?

A. A primary objective of regulation is to minimize the cost of reliable service to ratepayers while allowing public utilities to earn a fair and reasonable rate of return. When a public utility is authorized a rate of return on rate base equal to a reasonable cost of capital, the interests of ratepayers and investors are properly balanced. If the authorized rate of return is greater than a reasonable cost of capital, ratepayers are burdened with excessive rates. Conversely, if the authorized rate of return is less than a reasonable cost of capital, the utility may be unable to raise capital at a reasonable cost and ultimately may be unable to raise sufficient capital to meet demands for service. Therefore, the interests of ratepayers